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New Exotic Crane-Flies (Tipulidae: Diptera). Part III

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The preceding part under this general title was published in ENTOMOLOGICAL NEWS, 71: 237-243, 1960. At this time I am describing species from various parts of India, all belonging to the extensive genus *Hexatoma*. The specimens were collected by Dr. Fernand Schmid, to whom I am greatly indebted for many crane-flies from various parts of southern Asia.

Hexatoma (*Hexatoma*) *madrasensis* new species

Size small (wing of female 5.5 mm.); general coloration of mesonotum medium brown, praescutum glabrous; wings weakly tinged with brown, without stigma; veins unusually glabrous; Sc_1 ending some distance before fork of Rs , R_2 close to fork of R_{2+3+4} , *m-cu* at fork of *M*.

♀. Length about 5 mm.; wing 5.5 mm.; antenna about 0.8 mm.

Rostrum and palpi light brown, much reduced. Antennae of female 6-segmented, light brown; first flagellar segment stout basally, gradually tapering to outer end, subequal in length to the succeeding two segments, with delicate pale setae additional to the scattered bristles, the latter longer and more evident on the outer segments. Head dark brown; vertical tubercle large, entire.

¹ Contribution from the Entomological Laboratory, University of Massachusetts.

Mesonotal praescutum and scutum uniformly medium brown, the surface subnitidous, glabrous; posterior sclerites of notum a trifle paler. Pleura light brown, vaguely darker on the anepisternum and ventral sternopleurite. Halteres infuscated, knob large. Legs with coxae and trochanters testaceous brown; remainder of legs yellowish brown, with relatively short setae. Wings weakly tinged with brown, the prearcular and costal fields a trifle more yellowed; stigma lacking; veins pale brown. Veins unusually glabrous, beyond the cord with about five macrotrichia on distal section of R_5 , distributed over the entire length. Venation: Sc relatively short, Sc_1 ending some distance before fork of Rs ; R_{2+3+4} long, with R_2 at or close to fork; veins R_3 and R_4 divergent, cell R_3 at margin only a little less extensive than R_2 ; outer medial veins weak; $m-cu$ at fork of M , a little shorter than distal section of Cu_1 .

Abdominal tergites dark brown, sternites somewhat more brightened on central part. Ovipositor with valves only moderately developed, with setae virtually to their tips.

Habitat. SOUTH INDIA. *Holotype*: ♀, Veraiyattu Tittu, Madras, 1,500 feet, December 21, 1958 (Fernand Schmid).

This is the first record of occurrence of the typical subgenus in south India. The species is quite distinct from the species known from the western Himalayas, being somewhat more like *Hexatoma* (*Hexatoma*) *brevistigma* Alexander, of Thailand. This differs especially in the venation and pattern of the wings, including the evident stigmal area, longer Sc , and position of vein R_2 well beyond the fork.

***Hexatoma* (*Eriocera*) *perlongata* new species**

Size medium (wing 11 mm.); antennae short; vertical tubercle orange, very large, bilobed; thorax brownish black, scutellum obscure yellow; halteres and legs black, femoral bases broadly yellowed; wings infuscated, base conspicuously yellow; Rs very long, R_2 before the fork, cell M_2 open by atrophy of m ; abdomen yellowed, hypopygium black.

♂. Length about 10 mm.; wing 11 mm.; antenna about 1.7 mm.

Rostrum obscure yellow, palpi black. Antennae of male 7-

segmented; scape obscure yellow, remainder dark brown; first flagellar segment longer than the succeeding two combined, with subappressed black setae; penultimate segment a trifle exceeding the antepenultimate and about twice the terminal one. Vertex brown posteriorly, summit with a very large orange enlargement, depressed medially in front, forming two conspicuous lobes that are directed cephalad.

Prothorax, mesonotum and scutal lobes brownish black, surface subnitidous, praescutum with sparse delicate setae; scutellum obscure yellow, parascutella and postnotum brownish black. Pleura blackened. Halteres black. Legs with coxae testaceous brown; trochanters yellow; femora black, their bases broadly yellow, including about the basal half on fore and middle legs, approximately two-thirds to three-fourths on posterior pair; tibiae and tarsi black, proximal tarsal segments a little paler. Wings strongly infuscated, wing base and most of cell *Sc* yellowed; pale streaks in centers of certain cells, especially, R_1 and R_4 ; a narrow more whitened line in cell 1st *A* immediately behind the posterior half of vein. Veins beyond cord with abundant strong macrotrichia, basad of cord on outer half of R_s , outer third of *M* and a few near outer end of 1st *A*. Venation: *Sc* relatively short, Sc_1 ending before fork of R_s , Sc_2 near its tip; R_s very long, at least one-half longer than *R*; R_2 before the radial fork, leaving a short element R_{3+4} ; R_{1+2} subequal to R_2 ; cell M_2 open by atrophy of *m*, cell M_3 longer than its petiole; *m-cu* just beyond the fork of *M*.

Abdomen partly destroyed by insect pests; first segment dark brown, intermediate ones obscure yellow; hypopygium and possibly some adjacent segments black.

Habitat. SIKKIM. *Holotype:* ♂, Bop, 5,950 feet, July 15, 1959 (Fernand Schmid).

Hexatoma (Eriocera) perlongata is a very distinct fly, especially in the venation, as the elongate R_s , position of R_2 and open cell M_2 . *H. (E.) dharma* Alexander, of South India, has cell M_2 open by atrophy of basal section of M_3 , differing further in all details of coloration and in other venational features, as the short R_s and position of vein R_2 beyond the radial fork.

Hexatoma (Eriocera) vamana new species

Belongs to the *longicornis* group; size unusually small (wing of male less than 7 mm.); antennae of male about three times the body; general coloration of thorax dark brown, abdomen black; wings suffused with brown, macrotrichia of veins very sparse; R_2 longer than R_{1+2} , before the radial fork, leaving an element R_{3+4} ; veins R_3 and R_4 divergent, cell R_3 wide at margin; *m-cu* at near one-third the length of M_{3+4} .

♂. Length about 5.5 mm.; wing 6.8 mm.; antenna about 18 mm.

Rostrum and mouthparts very reduced, brown; palpi short, black. Antennae of male 6-segmented, very long, approximately three times the body; scape large, brownish yellow; remainder of organ brown, passing into black outwardly; flagellar segments very long, progressively lengthened outwardly; emergence bristles small and scattered, on the outer segments more delicate and hairlike. Head medium brown; vertical tubercle glabrous, large and bulbous, entire.

Pronotum brown. Mesonotum almost uniformly dark brown; praescutal setae long but very sparse. Pleura dark brown. Halteres infuscated, paler at base, knob dark brown. Legs with coxae dark brown; trochanters brownish yellow; remainder of legs dark brown; setae of legs long but sparse (posterior legs broken). Wings suffused with brown, stigmal region vaguely darker; veins brown, outer medial veins pale and delicate. Macrotrichia of veins beyond cord very sparse, with few on R_1 and only two or three at outer end of R_5 ; costal fringe short. Venation: R_2 nearly twice R_{1+2} and slightly longer than R_{3+4} ; veins R_3 and R_4 divergent, cell R_3 at margin slightly more extensive than cell R_2 ; cell 1st M_2 subequal in length to distal section of vein M_{1+2} ; *m-cu* at near one-third the length of M_{3+4} , longer than distal section of Cu_1 ; cell 2nd A relatively narrow.

Abdomen, including hypopygium, black.

Habitat. SOUTH INDIA. *Holotype:* ♂, Sathupara, Madras, 1,500 feet, December 1, 1958 (Fernand Schmid).

Hexatoma (*Eriocera*) *vamana* is readily told from other regional members of the *longicornis* group by the small size and venation of the radial field. The specific name, *vamana*, is that of the dwarf incarnation of Vishnu in Hindu mythology.

***Hexatoma* (*Eriocera*) *gnava* new species**

Belongs to the *longicornis* group; general coloration of thorax brownish gray, praescutum with four brown stripes; antennae of male very long, 6-segmented; legs obscure yellow, posterior tibiae with long pale setae; wings weakly darkened, stigma pale brown, veins glabrous; R_{1+2} and R_2 subequal, R_{2+3} about three times R_2 ; valves of ovipositor short and fleshy.

♂. Length about 8–9 mm.; wing 10–11 mm.; antenna about 32–36 mm.

♀. Length about 8–8.5 mm.; wing 10–10.5 mm.; antenna about 1.7 mm.

Rostrum reduced, light brown; palpi very small, black. Antennae of male greatly lengthened, approximately three times the wing; proximal three or four segments yellowish brown, outer segments passing into black; organ apparently 6-segmented, with the terminal segment very long, only a little shorter than the remainder of organ; basal three flagellar segments with small scattered emergence bristles, these becoming more scattered on outer segments, with still fewer and smaller setae on the terminal segment; scape very large, pedicel correspondingly reduced; in female, antennae short, if bent backward not reaching the wing root, apparently 6-segmented. Head chestnut brown, more pruinose behind; vertical tubercle of male very large and tumid, entire, provided with long pale setae on posterior aspect; a blackened area on anterior face behind the scape; tubercle of female much smaller.

Pronotum brownish gray. Mesonotal praescutum brownish gray with four brown stripes, the intermediate pair well separated; posterior sclerites of notum brownish gray, scutal lobes patterned with darker; notal vestiture very abundant, white, erect. Pleura chiefly dark brown, sparsely pruinose, pleuro-

tergite with white setae; dorsopleural membrane darker. Halteres with stem faintly darkened, knob dark brown. Legs with coxae light brown; trochanters brownish yellow; femora obscure yellow, tibiae and tarsi slightly darker; posterior tibiae with abundant long pale setae. Wings weakly darkened, stigma pale brown, ill-delimited; veins dark brown, those of the costal and prearcular fields yellowed. Veins glabrous, beyond cord with a complete but scattered series of small macrotrichia on distal section of R_3 ; no trichia on R , R_1 or Sc except a very few on R_1 in the stigmal area; costal fringe of male short but dense. Venation: R_{1+2} subequal to or a little longer than R_2 , the latter about one-third R_{2+3} ; $m-cu$ shortly beyond fork of M .

Abdomen, including hypopygium, dark brown, basal tergites a trifle paler. Ovipositor with valves short and fleshy, as in typical *Hexatoma*.

Habitat. WEST INDIA. *Holotype*: ♂, Sykes, Bombay, 2,000 feet, February 5, 1959 (Fernand Schmid). *Allotopotype*: ♀, pinned with the type. *Paratopotypes*: 1 ♂, 3 ♀♀.

The closest regional ally of the present fly is the Javanese *Hexatoma (Eriocera) verticalis* (Wiedemann) which differs in coloration of the body and wings and in the venation, especially of the radial field. The present fly presumably is the same species that was recorded from Pusa, Bihar, India by Brunetti (Rec. Indian Mus., 15: 333, 1918).

***Hexatoma (Eriocera) artifex* new species**

Size medium (wing of male 10 mm.); mesothorax black, the notum more opaque, with a large fulvous area on the dorsopleural membrane; legs black, femoral bases narrowly yellowed; wings yellowed, the costal border and seams over virtually all veins brown; cell M_1 lacking; abdomen dull black, vaguely pruinose, second segment chiefly yellow.

♂. Length about 10 mm.; wing 10 mm.; antenna about 2 mm.

Rostrum black, gray pruinose; palpi black. Antennae of male 6-segmented, black, the scape pruinose; first flagellar segment about one-sixth longer than the second, with strong setae, especially beneath; bristles of succeeding segments few and

scattered. Head black, gray pruinose, opaque; vertical tubercle low and rounded.

Entire thorax black, surface of notum nearly opaque, of pleura more polished and clearer black; a large fulvous area on the dorsopleural region above the anepisternum; praescutal vestiture very small and sparse. Halteres black. Legs black, coxae polished; femoral bases narrowly but conspicuously yellow (fore legs broken). Wings with the ground yellowed, much restricted by infuscations in the costal region and as seams over all the veins, the latter more extensive in the outer radial field, least so on basal half of vein M ; wing base more yellowed, including the veins, remaining veins dark brown. Veins beyond cord with strong macrotrichia, fewer on R_{2+3+4} and basal section of R_5 , lacking on the two proximal sections of M_{1+2} , M_{3+4} and Cu_1 ; strong trichia on Sc for most of its extent. Venation: Sc relatively long, Sc_1 ending about opposite $r-m$; R_{2+3+4} about twice the basal section of R_5 or more than twice R_{1+2} ; R_2 beyond the fork, R_{2+3} short; cell M_1 lacking but this probably a variable character since the left wing of the unique type shows a marginal remnant in cell R_5 that seems undoubtedly to represent a fragment of M_1 ; $m-cu$ at or beyond midlength of M_{3+4} .

Abdomen dull black, vaguely pruinose; much of second segment yellowed, on the sternites this vaguely involving the centers of segments three and four; hypopygium black.

Habitat. SOUTH INDIA. *Holotype*: ♂, Swamp Hill, Madras, 7,500 feet, December 13, 1958 (Fernand Schmid).

The nearest relative of the present fly is *Hexatoma* (*Eriocera*) *atrodorsalis* (Alexander), likewise from South India, which differs especially in the coloration of the body and the presence of cell M_1 . It should be emphasized that this latter character may prove to be variable in both of these species.

Hexatoma (*Eriocera*) *vulpes* new species

Belongs to the *dichroa* group; size large (wing of male over 15 mm.); general coloration fulvous or yellow; head with a conspicuous vertical tubercle; mesonotal praescutum with four fulvous stripes; legs obscure yellow; wings strongly tinged with

fulvous yellow, veins yellow, cell M_1 present; abdomen yellow, the hypopygium darker.

♂. Length about 20 mm.; wing 16.5 mm.; antenna about 3.4 mm.

♀. Length about 20 mm.; wing 14 mm.; antenna about 3 mm.

Rostrum obscure yellow; palpi brownish black. Antennae short in both sexes, 8-segmented; scape and pedicel brown, the former more yellowed beneath, flagellum brownish black; flagellar segments with long coarse setae; first flagellar segment shorter than the succeeding two segments combined. Head dark gray, the conspicuous slender porrect vertical tubercle more blackened, with a second smaller knob immediately cephalad; vestiture of head black, abundant.

Pronotum brownish yellow. Mesonotal praescutum with the restricted ground light brownish gray, with four fulvous stripes that are narrowly bordered by reddish brown, the intermediate pair separated by a capillary line, black in front, paling to brown behind; praescutal vestiture erect, delicate; scutal lobes similarly fulvous, its central area and the scutellum more testaceous; postnotum, including the mediotergite and posterior half of pleurotergite, more yellowed; remainder of the latter, with the pleura, slightly darker, especially above, ventral sternopleurite yellowed. Halteres brownish black, base of stem restrictedly brightened. Legs with coxae reddish, sparsely gray pruinose; trochanters brownish yellow; femora obscure yellow, the tips very narrowly more darkened above; tibiae and tarsi obscure yellow, the last tarsal segment darkened; claws of male with a strong basal spine, in female this smaller and more obtuse. Wings long and narrow, with a strong fulvous brown tinge, more saturated along costal border; stigma lacking; veins yellow, involving the restricted adjoining membrane, more conspicuous on anterior half of wing. Veins of outer radial field, together with M_1 and M_2 , with abundant short macrotrichia, sparse or lacking elsewhere. Venation: Sc long, Sc_1 ending just beyond R_2 , Sc_2 a short distance from its tip; R_{2+3+4} slightly longer than basal section of R_5 or R_{2+3} ; R_{1+2} subequal to R_{2+3+4} ; cell M_1 subequal to its

petiole; cell 1st M_2 small, subrectangular, with *m-cu* at or beyond midlength; vein 2nd A long, sinuous.

Abdomen yellow, narrowly darkened laterally; hypopygium more infuscated; segments without differentiated shiny basal rings. Ovipositor with cerci long and very slender.

Habitat. SOUTH INDIA. *Holotype*: ♂, Kuttalam, Madras, 500–2,000 feet, November 23, 1958 (Fernand Schmid). *Allotype*: ♀, Krishnappanayakkan, Madras, 1,200 feet, November 30, 1958 (Fernand Schmid).

By Edwards's key to the Old World species of the subgenus *Eriocera* (1921), the present fly runs to couplet 42 where it disagrees with all succeeding species in its coloration, being most similar to *Hexatoma* (*Eriocera*) *ferruginosa* (van der Wulp) of Java. This latter fly is quite distinct in all details of coloration and venation.

Collembola from Japan. III. Hypogastrurinae and Neanurinae¹

By HAROLD GEORGE SCOTT²

This paper records six species of springtail insects collected by Captain John E. Scanlon³ while with the 406th Medical General Laboratory (U. S. Army) in Japan. Specimens will be deposited with the Academy of Natural Sciences, Philadelphia, Pennsylvania.

Subfamily HYPOGASTRURINAE Börner, 1906

Hypogastrura armata (Nicolet, 1841).

The Scanlon specimens show the traits which caused Oriental individuals of the species to be designated *H. communis* (Fol-

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